

Cancer and the Environment

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Introduction

This information sheet presents common questions and answers about cancer risks and the environment. Included is a list of things you can do to prevent or minimize cancer risks.

We all learn about risks at an early age – how to recognize them and how to avoid them. Some risks are obvious and immediate: hot stoves, use of chain saws, driving on the highway. But other risks (especially those associated with cancer) like tobacco use and exposure to chemicals or radiation can be delayed in their possible effects and are often hard to weigh.

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What is cancer?

Cancer is not a single disease. It is a group of more than 100 different diseases. Cancer can be generally described as an uncontrolled growth and spread of abnormal cells in the body. Different types of cancer have different causes. Some cancers are more common than others, and chances for survival vary among different types.

Cancer can develop in people of all ages, but it is more common in people over 60 years old. In the United States, men have a slightly less than one in two lifetime risk of developing cancer; the risk for women is a little more than one in three. Because people are living longer, the risk of developing cancer is increasing.

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What causes cancer?

Since cancer is not a single disease, it does not have a single cause. There are many causes, or “risk factors” that may contribute to a person’s chance of getting cancer. Risk factors act, either alone or with other risk factors, over many years to increase a person’s chance of developing cancer.

Risk factors are different with each type of cancer. They can include such things as age, race, socioeconomic status, gender, other genetic factors, and also chemical exposures, diet, radiation, and

exposure to tobacco. For many cancers, such as breast and colon cancer, genetics may play a large role. This means that a family's health history can be a risk factor for some types of cancers.

Personal choices we make about the way we live our lives can increase our chance of developing cancer. These factors, called "lifestyle factors," include: cigarette smoking; heavy drinking; and eating foods that have excess calories, high fat, and low fiber. Other factors that increase risk are related to sexual behavior and sunlight exposure.

Cigarette smoking is a leading cause of cancer in the U.S. today. In addition to lung cancer, cigarette smoking is also associated with cancers of the mouth, pharynx, larynx, esophagus, pancreas, kidney, and bladder. In 2004, more than 180,000 people are expected to die of cancer caused by tobacco use.

Approximately 30 percent of all cancer deaths are related to smoking, and the risk of dying from lung cancer is 10 to 20 times higher for smokers compared to non-smokers. In fact, smoking is the most preventable cause of death in our society.

The development of cancer is a long process. It starts with genetic changes in cells, and growth of these cells over time. The time from genetic change to the development of cancer is called the "latency period." The latency period can be as long as 30 years. This means that some cancers diagnosed today may be due to genetic changes that occurred in the cells a long time ago.

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Are cancer rates increasing in the U.S.?

There has been a steady rise in the overall death rate from cancer in the U.S. in the past 50 years. One of the major causes of this rise is the increase in lung cancer, which is strongly associated with increases in smoking. Another major factor for an increase in cancer rates is that individuals live longer. In 1900, people lived to an average age of about 50 years. Medical science has extended that human life span by over 50 percent, to an average of about 77. Scientists believe that mutations, or abnormal changes, to our body's cells are a primary cause of cancer. The increase in our life span has allowed significantly more chances of these mutations to occur. In the U.S., cancer is the second leading cause of death, causing 1 out of every 4 deaths.

Death rates for many types of cancer other than lung cancer have decreased or remained steady between 1930 and 2000. This decrease is because of improvements in the early detection and treatment of specific types of cancers such as breast, colon, and cervical cancers. In Michigan, mortality rates from cancer have been steady or declining since the early 1990s, following a long history of rising rates.

The incidence of cancers in Michigan is monitored by the [Michigan Cancer Surveillance Program](#) within the Epidemiological Services Division of the Michigan Department of Community Health (MDCH). Mandated by law since 1985, this program collects information on all new cases of cancer diagnosed in Michigan.

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What about cancer in children?

It can be especially difficult to understand and accept a child developing cancer. The most common cancers in children are leukemia and brain and spinal cord cancers. Although an estimated 9400

children under age 14 are expected to be diagnosed with cancer in 2004, mortality rates from childhood cancer have declined by about 49% since 1975.

Although some childhood cancers are associated with specific genetic, prenatal, and environmental factors, in most cases what causes the cancer remains unknown. Factors that have been implicated in childhood cancers include genetics, infectious diseases, perinatal conditions, environmental pollutants, radiation, electromagnetic fields, and use of medications. However, few studies have been able to show a consistent link between cancer and these factors.

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What about chemicals in the environment?

Exposures to some chemicals in the environment, at home, and at work may contribute to an individual's risk of developing cancer. Benzene, asbestos, vinyl chloride, and arsenic are examples of toxic substances that can increase the risk of cancer to those exposed to them. The EPA has classified these substances as "known human carcinogens" because studies have shown a link between exposure to them and cancer.

Some chemicals have been shown to cause cancer in animals, but there is not enough evidence to show that these chemicals also cause cancer in humans. These chemicals are classified by the EPA as "possible or probable human carcinogens." Chloroform, DDT, formaldehyde, and PCBs are examples of such chemicals.

Most of what we know about chemicals and cancer in humans comes from scientists' observations of workers. The most significant exposures to cancer-causing chemicals have occurred in workplaces where large amounts of toxic chemicals have been used regularly. This is why safe work practices, personal protection equipment such as respirators and gloves, good air ventilation, and other controls are so important in protecting workers and their families.

The amount of toxic chemicals found in food, air, and drinking water are typically much lower than in the work environment. Therefore, cancer risk from environmental exposures is thought to be very low compared to the risk in occupational settings. In fact, the cancer risk from environmental exposures is usually so low that it is difficult to measure.

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What if I see an unusual number of cancers among my neighbors or co-workers? Could it be something in our environment?

Often when we see many people in our community or neighborhood with cancer, it seems like there is an "outbreak." Since the people with cancer live near one another, it may also seem that the cancers are all caused by something in the environment. However, this is rarely true. Cancer is common in our population, and different types of cancer have different causes. As mentioned earlier, one out of three people in America will develop some type of cancer sometime in their lives.

Also, the latency period for many cancers can be up to 40 years long. People in a community with cancer may have lived in many different places throughout their lives, and often could not have been exposed to the same things that are present where they currently live.

It is not unusual for there to be many cases of cancer in a single community or neighborhood, especially if the community is aging. In fact, cancers *often* occur in clusters and are not evenly spread out in the population. This does not necessarily mean that they are related.

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What is being done to control cancer-causing chemicals?

Strict federal and state standards have been set to minimize our exposures to cancer-causing chemicals. This applies to chemicals that are used on the job and in our daily home lives, in our water, our food, and our air. However, many banned products, such as asbestos or PCBs, continue to be found in our environment.

Scientists continue to gather information and assess the risks from chemical exposures. Each new study adds to our understanding of how chemicals affect the body. More information is still needed to help us make decisions about how much of which chemicals is safe.

Ironically, one of the most potent and well-known cancer-causing chemicals, tobacco, is largely uncontrolled. There are over 40 known or suspected carcinogens present in tobacco smoke. Progress has been made, however, in controlling exposure to secondhand smoke in public buildings and on the job.

Some carcinogens in the environment occur naturally and are much harder to control. Arsenic in underground rock can get into drinking water wells. Radiation from the sun is also a strong carcinogen. Sometimes the best way to minimize risk is to make good choices. When necessary, we can use alternative drinking water supplies or protect ourselves from the sun.

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What steps can be taken to minimize our cancer risks?

We can't eliminate all risks in our lives. But we can, to an extent, manage them. The Michigan Department of Community Health endorses the following American Cancer Society recommendations to prevent or minimize cancer risks:

- Stop smoking and using other tobacco products, or better yet, don't start.
- Avoid excessive exposure to sunlight.
- Follow nutritional guidelines: eat more fruits and vegetables; eat a low-fat, high-fiber diet; limit consumption of smoked and nitrite-cured foods; limit alcohol intake; and avoid obesity.
- Seek prompt medical attention for changes in your body. Follow the screening guidelines of the American Cancer Society for cancers such as breast cancer, cervical cancer, and colorectal cancer. By detecting cancer early and treating it promptly, you can protect yourself and your quality of life.

In addition:

- Be aware of the chemicals in the products you purchase for your home (such as pesticides, preservatives, paints, paint thinners) and those you use on the job. Read labels carefully and follow the directions for proper use of chemicals. Whenever possible, substitute less toxic products.
- It is also important to keep in mind that a single study on the causes of cancer is seldom conclusive. Each new study, however, can add to the body of evidence that scientists use for understanding the causes of cancer.

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American Cancer Society. Cancer Facts and Figures 2004.
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Michigan Department of Community Health. Cancer Statistics.
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Where can I get more information?

MDCH Division of Environmental and Occupational Epidemiology at
www.michigan.gov/mdch-toxics or 1-800-MI-TOXIC

MDCH Cancer Prevention and Control Section www.michigan.gov/cancer

MDCH's [*Toxic Substances Information Directory*](#), for more cancer-related resources

[Michigan cancer statistics](#)

[American Cancer Society](#)

[National Cancer Institute](#)

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